Use of the Seabed Imaging and Mapping System for Change Detection Monitoring

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Abstract
The Seabed Imaging and Mapping System (SIMS) uses classified imagery that is collected with a towed video system. This system has previously been used throughout the Strait of Georgia (~20 projects) for creating biophysical maps of seabed habitat; typically up to 21 physical themes are mapped (e.g. gravel cover, man-made features) together with 77 biological themes (e.g., eelgrass cover, total vegetation cover, seastar occurrence). A recent survey near Sidney, BC was used to test overall reproducibility including sensitivity of the system to classifier error, and sensitivity to spatial gridding. Multiple classification tests were conducted to estimate inter- and intra-classifier error for a variety of features and species. Grids were surveyed at up to 10m line-spacing and imagery classified. Data were plotted using a variety of grids (e.g., using every line, every other line, every third line) to test sensitivity to grid-spacing. The data provide the basis for defining confidence in mapping resolution and the minimum change in species density that can be detected using this system. The data are relevant not only to our SIMS classification and mapping protocols but to that of ROV or diver surveys.